



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/563,510	01/04/2006	Kazutoshi Nomoto	112857-505	8478
29175	7590	02/26/2009		
BELL., BOYD & LLOYD, LLP			EXAMINER	
P. O. BOX 1135			DIAO, M BAYE	
CHICAGO, IL 60690			ART UNIT	PAPER NUMBER
			2838	
			MAIL DATE	DELIVERY MODE
			02/26/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/563,510	Applicant(s) NOMOTO, KAZUTOSHI
	Examiner M'BAYE DIAO	Art Unit 2838

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If no period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 01 December 2008.

2a) This action is FINAL. 2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 24-49 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) Claim(s) _____ is/are allowed.

6) Claim(s) 24-49 is/are rejected.

7) Claim(s) _____ is/are objected to.

8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All b) Some * c) None of:

1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. _____.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date: _____
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	5) <input type="checkbox"/> Notice of Informal Patent Application
3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date: _____	6) <input type="checkbox"/> Other: _____

DETAILED ACTION

Amendment

1. Acknowledgement is made of Preliminary Amendment filed on 01/04/2006, in which claims 1-23 were cancelled and claims 24-46 were previously added.
2. **Acknowledgement is made of amendment filed on 12/01/2008 in which claims 24-46 are still pending, claim 28 is currently amended and claims 47-49 have been newly added.**

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.
2. **Claims 24-25,28-30,37-40, and 43-45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shibasaki et al., (Shibasaki) US PAT 5,475,271 in view of Pearson US PAT 6,555,989 .**

Regarding claim 24, Shibasaki discloses (abstract; col. 5, lines 26+; col. 6, lines 1 to col. 7, line 40) and shows in Figs. 1A-1C:

An electronic equipment (combination of (1) and (2)) that operates based on a predetermined power source, the electronic equipment comprising:

a body (1) at least having processing means (11) for executing various processes and consuming power (via system bus (10)); and

power source (51)connected to the body (1) via a predetermined bus (50), including a secondary battery (22A,22B) , secondary battery control means (201)for controlling the secondary battery (22A,22B).

3. **Shibasaki does not teach** the limitation of," a fuel cell which causes a predetermined fuel and air to electrochemically react with each other so as to cause a power generating unit to generate power; and

fuel cell control means for controlling the fuel cell, wherein the secondary battery control means and the fuel cell control means mutually transfer at least remaining secondary battery power information indicative of an amount of power remaining in the secondary battery and fuel cell status information indicative of a status of the fuel battery, to each other via the bus."

Pearson discloses (abstract; cols. 4-7) and shows in Fig. 1:

a fuel cell stack (5) which causes a predetermined fuel (methane (12), which obviously is on a container or tank, **as per claim 30**) and air (hydrogen, and ambient air (14), see col.4, lines 37+) to electrochemically react with each other (via subsystem (10)) so as to cause a power generating unit (by being controlled in accordance with various input signals, such as (30) which turns on reactant subsystem (10) when mains power source (2) is down or if the state of charge of battery (7) is unacceptably low, see col. 6, lines 22+); and

fuel cell control means ((10) via signals 33,32, and computing unit 63) for controlling the fuel cell (5), wherein the secondary battery control means (61)and the fuel cell control

means (10)mutually transfer at least remaining secondary battery power information indicative of an amount of power remaining in the secondary battery (7) and fuel cell (5) status information indicative of a status of the fuel battery (5), to each other via the bus (via signals (65,67,69 for the secondary battery and via signal (31) for the fuel cell (5)).

Pearson is evidence that ordinary workers in the art would find a reason, suggestion or motivation to include in the power source equipment for the electronic device a back up and load leveler hybrid fuel cell battery.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to combine Shibasaki with Pearson by including in the power source device a fuel cell which causes a predetermined fuel and air to electrochemically react with each other so as to cause a power generating unit to generate power; and fuel cell control means for controlling the fuel cell, wherein the secondary battery control means and the fuel cell control means mutually transfer at least remaining secondary battery power information indicative of an amount of power remaining in the secondary battery and fuel cell status information indicative of a status of the fuel battery, to each other via the bus, for advantages of providing an uninterrupted power supply as per the teachings of Pearson, (col. 3, lines 49-50).

Accordingly, claim 24 would have been obvious.

4. Regarding claim 25, Pearson discloses (abstract; cols. 4-7) and shows in Fig. 1:

a fuel cell (5) the electronic equipment as taught by Shibasaki, wherein the fuel cell control means (10) acquires (via signals 33,32, and computing unit 63) load information indicative of a load of the processing means.

5. Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to combine Shibasaki with Pearson by including in the power source device a fuel cell control means that acquires load information indicative of a load of the processing means via the bus and control the fuel cell based on the load information, for advantages of providing an uninterruptible power supply as per the teachings of Pearson, (col. 3, lines 49-50).

6. Accordingly, claim 25 would have been obvious.

7. Regarding claim 28, **Shibasaki does not specifically teach the limitation of**, wherein the fuel cell control means performs control so as to charge the secondary battery with the power outputted from the fuel cell.

8. Pearson discloses (abstract; cols. 4-7) and shows in Fig. 1: a fuel cell stack (5) which causes a predetermined fuel (methane (12), which obviously is on a container or tank, **as per claim 30**) and air (hydrogen, and ambient air (14), see col.4, lines 37+) to electrochemically react with each other (via subsystem (10)) so as to cause a power generating unit (by being controlled in accordance with various input signals, such as (30) which turns on reactant subsystem (10) when mains power source (2) is down or if the state of charge of battery (7) is unacceptably low, see col. 6, lines 22+); and

fuel cell control means ((10) via signals 33,32, and computing unit 63) for controlling the fuel cell (5).

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine Shibasaki with Pearson by including in the power source device a fuel cell control means that performs control so as to charge the secondary battery with the power outputted from the fuel cell, for advantages of providing an uninterrupted power supply as per the teachings of Pearson, (col. 3, lines 49-50).

Accordingly, claims 28, and 30 would have been obvious.

9. As per claims 31-34, Shibasaki when combined with Pearson differs from the claimed invention because they only disclose the secondary battery and the secondary battery controller, and the fuel cell and the fuel cell controller being part of the main body (1) and as a single package.

10. It would have been obvious to one of ordinary skill in the art at the time the invention was made to make the construction of the secondary battery and the secondary battery controller along with the fuel cell and the fuel cell controller to be externally connected as a single package, as recited in claim 8, and to make the construction of fuel cell and the fuel cell controller as a single package and externally connected to the body via the bus or alternatively make the secondary battery and the secondary battery controller constructed as a single package and externally connected to the body, since it has been held that rearranging parts of an invention involves only routine skill in the art. *In re Japikse*, 86 USPQ 70.

11. Accordingly, claims 31-34 would have been obvious.
12. Regarding claim 39, Shibasaki discloses (abstract; col. 5, lines 26+; col. 6, lines 1 to col. 7, line 40) and shows in Figs. 1A-1C:

a power source equipment (combination of (1) and (2)) connected via a predetermined bus (10) to a predetermined electronic equipment body (not shown but connected to the expansion unit (2)) at least having processing means (11) for executing various processes and consuming power (via connection of input terminal (5) to (CC,B-CC), see col. 5, lines 25-54), for supplying power to the electronic equipment body (via output plug (6)), the electronic equipment (1,2) comprising:

a secondary battery (22A or 22B);

secondary battery control means (201)for controlling the secondary battery.

Shibasaki does not teach the limitation of," a fuel cell which causes a predetermined fuel and air to electrochemically react with each other so as to cause a power generating unit to generate power; and

fuel cell control means for controlling the fuel cell, wherein the secondary battery control means and the fuel cell control means mutually transfer at least remaining secondary battery power information indicative of an amount of power remaining in the secondary battery and fuel cell status information indicative of a status of the fuel battery, to each other via the bus."

Pearson discloses (abstract; cols. 4-7) and shows in Fig. 1:

a fuel cell stack (5) which causes a predetermined fuel (methane (12), which obviously is on a container or tank,) and air (hydrogen, and ambient air (14), see col.4, lines 37+) to electrochemically react with each other (via subsystem (10)) so as to cause a power generating unit (by being controlled in accordance with various input signals, such as (30) which turns on reactant subsystem (10) when mains power source (2) is down or if the state of charge of battery (7) is unacceptably low, see col. 6, lines 22+); and

and fuel cell control means ((10) via signals 33,32, and computing unit 63) for controlling the fuel cell (5), wherein the secondary battery control means (61)and the fuel cell control means (10)mutually transfer at least remaining secondary battery power information indicative of an amount of power remaining in the secondary battery (7) and fuel cell (5) status information indicative of a status of the fuel battery (5), to each other via the bus (via signals (65,67,69 for the secondary battery and via signal (31) for the fuel cell (5)).

Pearson is evidence that ordinary workers in the art would find a reason, suggestion or motivation to include in the power source equipment for the electronic device a back up and load leveler hybrid fuel cell battery.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to combine Shibasaki with Pearson by including in the power source device a fuel cell which causes a predetermined fuel and air to electrochemically react with each other so as to cause a power generating unit to generate power; and fuel cell control means for controlling the fuel cell, wherein the secondary battery control means

and the fuel cell control means mutually transfer at least remaining secondary battery power information indicative of an amount of power remaining in the secondary battery and fuel cell status information indicative of a status of the fuel battery, to each other via the bus, for advantages of providing an uninterruptible power supply as per the teachings of Pearson, (col. 3, lines 49-50).

13. Accordingly, claim 39 would have been obvious.

14. Regarding claim 37, the method as recited would be obvious in view of the device as in claim 39.

15. Regarding claim 43, Pearson further discloses the power source unit according to claim 39, wherein the fuel cell control means ((10) via signals 33,32, and computing unit 63) performs control so as to charge the secondary battery (7) with the power outputted from the fuel cell (5).

16. Regarding claim 44, Pearson further discloses the power source unit according to claim 39, wherein the fuel cell control means (10)monitors a remaining amount of the fuel to be supplied to the fuel cell (5) and controls (via signals 32, 33, and computing unit 63) the fuel cell based on the remaining amount.

17. Regarding claim 45, Pearson further discloses the power source unit according to claim 39, further comprising control means ((10) via signals 33,32, and computing unit 63) connected to the bus (via signals (65,67,69 for the secondary battery and via signal (31) for the fuel cell (5)), for monitoring a remaining amount of the fuel stored in a tank (20) for supplying the fuel to the fuel cell (5), wherein the fuel cell control

means(10) controls the fuel cell (5)on the basis of the remaining amount of the fuel detected by the control means.

18. Accordingly, claims 24-25,28-30,37-40, and 43-45 would have been obvious.

19. **Claims 26-27,36,41-42, and 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shibasaki et al., (Shibasaki) in view of Pearson, and further in view of De Boois et al., (De Boois) US PAT 6,069,465.**

20. Regarding claim 26, Shibasaki when modified by Pearson discloses that the signal ((30), see Pearson, col. 6, lines 37-50) is indicative of the load conditions whether to give the subsystem (10) the green light to supply power to the fuel cell stack (5) or not but **Pearson differs from the claimed invention because he does not specifically disclose that the fuel cell control means sets a plurality of operating modes for the fuel cell.**

21. De Boois discloses () and shows in Fig. 1, a group control system (1) for lighting devices comprising sets 2, 3, 4 of motorized light regulating assemblies (5), wherein each set of light regulating assemblies (5) is connected to a data and power transmission line (9),(9') and via a sub master unit (10). The combined data and power transmission lines (9), (9'), (9'') comprise a two-wire bidirectional 300 baud half-duplex (as per claims 36 and 46) line supplying the (24 V) DC supply voltage to the control units (6), (6)' and transmitting data pulses to the control units.

22. De Boois further discloses that each group control unit (11-11") and the main control unit (12) comprises a dial **(as per claims 26-27, and 41-42)** for selecting (32) blind positions. The selected blind position will be transmitted to each control unit (6),(6)'

and to other group control units connected to the combined 24 V supply and data communication output terminal of the operated group control unit

23. Accordingly claims 26-27,36, 41-42, and 46 would have been obvious.

24. **Claims 35, and 47-49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shibasaki et al., (Shibasaki) in view of Pearson, and further in view of Sainsbury et al., (Sainsbury) US PAT 6,104,162.**

25. Regarding claim 35, Both Shibasaki and Pearson fail to teach the limitation of, wherein the secondary battery and the secondary battery control means as well as the fuel cell and the fuel cell control means are contained in the body.

26. Sainsbury discloses (col. 5, lines 3-7) and shows in Fig. 6 a multifunctional battery module (19) including battery unit (41) consisting of one or a combination of battery and fuel cell units.

27. It would have been obvious to one of ordinary skill in the art at the time of the invention of Shibasaki when combined with Pearson to utilize a combination of fuel cell and battery so as to provide complementary power to the tool, as per the teachings of Sainsbury (col. 5, lines 3-7).

28. Accordingly, claim 35 would have been obvious.

29. Regarding claims 47-49, both **Shibasaki and Pearson fail to teach the limitation of**, wherein the power source is a hybrid battery pack in which the secondary battery and the fuel cell are compositely combined with each other.

30. Sainsbury discloses (col. 5, lines 3-7) and shows in Fig. 6 a multifunctional battery module (19) including battery unit (41) consisting of one or a combination of battery and fuel cell units.
31. It would have been obvious to one of ordinary skill in the art at the time of the invention of Shibasaki when combined with Pearson to utilize a hybrid battery pack in which the secondary battery and the fuel cell are compositely combined with each other so as to provide complementary power to the tool, as per the teachings of Sainsbury (col. 5, lines 3-7).
32. Accordingly, claims 47-49 would have been obvious.
- 33.

Response to Arguments

34. Applicant's arguments with respect to claims 24-49 have been considered but are moot in view of the new ground(s) of rejection.
- 35.

Citation of Prior Art

36. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The prior art cited in the PTO-892 and not mentioned above disclose related apparatus.

Tahara US 2004/0175602 discloses fuel battery device and method for controlling fuel battery.

Ozeki, US 2004/0062962 discloses an electronic apparatus with fuel cell and control method of operation of fuel cell.

Iwase, US 2001/0018138 discloses fuel cells system and method of controlling cells.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to M'baye Diao whose telephone number is 571-272-6127. The examiner can normally be reached on 8:30-5:00; First Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Akm Ullah can be reached on Monday through Thursday at 571-272-2361. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Akm Enayet Ullah/
Supervisory Patent Examiner, Art Unit 2838
/M. D./

/M'baye Diao/
Examiner, Art Unit 2838